

REMEDIAL ACTION CONTRACT 2
FOR REMEDIAL, RESPONSE, ENFORCEMENT OVERSIGHT, AND NON-TIME
CRITICAL REMOVAL ACTIVITIES AT SITES OF RELEASE OR
THREATENED RELEASE OF HAZARDOUS SUBSTANCES
IN EPA REGION VIII

U.S. EPA CONTRACT NO. EP-W-05-049

DRAFT FINAL
CONSTRUCTION COMPLETION REPORT
BEAVER DAM PARK REMEDIAL ACTION
COMMUNITY SOILS OPERABLE UNIT
ANACONDA SMELTER NATIONAL PRIORITIES LIST SITE
ANACONDA - DEER LODGE COUNTY, MONTANA

Work Assignment No.: 346-RARA-0818

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List of Acronyms

ADLC	Anaconda – Deer Lodge County
Atlantic Richfield	Atlantic Richfield Company
BCY	bank cubic yards
CDM Smith	CDM Federal Programs Corporation
CCR	construction completion report
DEQ	Montana Department of Environmental Quality
DPS	development permit system
EPA	U.S. Environmental Protection Agency
HAZWOPER	hazardous waste operations and emergency response
CCI	CDM Constructors, Inc.
ISWP	individual site work plan
LCY	loose cubic yard
mg/kg	milligrams per kilogram
NPL	National Priorities List
OU	operable unit
RA	remedial action
RAC	remedial action contract
ROD	record of decision
SOW	Statement of Work
SPAOD	superfund planning area overlay district
WMA	waste management area
XRF	x-ray fluorescence

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Section 1

Section 1

Introduction

This document serves as the construction completion report (CCR) for the 2011 Beaver Dam Park Soil Remediation Project within the community of Opportunity under the Community Soils Operable Unit (OU) of the Anaconda Smelter National Priorities List (NPL) Site, Anaconda – Deer Lodge County (ADLC), Montana. At the direction of the U.S. Environmental Protection Agency (EPA), this project was implemented by CDM Federal Programs (CDM Smith) in accordance with the Individual Site Work Plan (ISWP) modified by EPA's March 25, 2011 approval letter. The remedial work was performed and this report prepared under Work Assignment No. 346-RARA-0818 under EPA Remedial Action Contract (RAC), No. EP-W-05-049.

The objective of this report is to provide a summary of the remedial actions undertaken at the Beaver Dam Park Site and to certify that the work completed was consistent with the site record of decision (ROD).

1.1 Site Location and Background

The Beaver Dam Park Site consists of approximately ten acres of level terrain within the community of Opportunity (Figure 1). The Beaver Dam Park Site is bounded by Beaver Dam Lane to the north, Rickards Street to the south, Hauser Street to the west, and Norris Street to the east (Figure 2). Prior to 2011, the Beaver Dam Park Site consisted of the former Beaver Dam School and associated vacant land, including a school building and annex, asphalt parking lot, and old playground equipment.

Soil cleanup levels for arsenic at the Anaconda Smelter NPL Site have been established based on land use. They are as follows:

Anaconda Smelter NPL Site Human Health Risk-Based Arsenic Cleanup Levels

Land Use	Media	Soil Arsenic Action Level (mg/kg)
Residential	Soil	250
Commercial/Industrial	Soil	500
Agricultural/Recreational/Open Space	Soil	1,000

mg/kg = milligrams per kilograms

The Beaver Dam Park Site is located in a residential neighborhood. Residential properties border the site to the east, west and south, and the Anaconda Community Golf Course is located to the north. Because of this, the human health arsenic cleanup action level for the anticipated land use (park) of this property was determined to be 250 mg/kg.

The Beaver Dam School was closed in 1981, and the site sat unoccupied for nearly 30 years. Under separate actions, funding to construct a park was secured by ADLC. Prior to development, ADLC conducted soil sampling at the vacant school property under their Interim Institutional Controls Plan (ADLC, 2008a). Screening level samples indicated that arsenic concentrations above the residential land use action level were present in the upper 18-inch soil profile.

1.2 Objectives

The primary objective of this RA was to remove soils and waste materials contaminated with arsenic above the 250 mg/kg residential land use cleanup action level, dispose those impacted materials at the Opportunity Ponds Waste Management Area (WMA), and replace the excavated materials with clean soil fill to allow re-development by ADLC to turn the property into a community park.

1.3 Previous Investigations

In 2009, ADLC acquired the 9.5 acre Beaver Dam School property from School District 10 for the purposes of developing the former school grounds into a community park. As part of the property transfer, ADLC conducted soil sampling under the ADLC Interim Institutional Controls Plan Sampling and Analysis Plan (ADLC, 2008b). This results of this initial sampling indicated that several soil locations and intervals exceeded the residential use action level of 250 mg/kg arsenic as indicated through x-ray fluorescence (XRF) analysis. EPA and Atlantic Richfield Company (Atlantic Richfield) then re-sampled the property and submitted the collected samples for laboratory XRF analysis. Upon receipt of the analytical results, Atlantic Richfield developed an ISWP (Atlantic Richfield, 2011a) based on removal of specific soil areas ("quadrants") where the arsenic concentration exceeded the action level.

As noted earlier, the Beaver Dam property was to be developed by ADLC into a park under a separate contract. The construction contract contained specific requirements requiring timely completion of the work. Because the construction schedule did not permit time for confirmation sampling, analysis, and additional removal if required, In a March 25, 2011 letter, EPA rejected the ISWP in favor of an over-excavation approach that would not require confirmation sampling after removal was complete. The EPA plan called for removal of the eastern six quadrants to a depth of 6 inches, and removal of the western four quadrants, as shown in Figure 3.

1.4 Beaver Dam Park RA Description

EPA tasked CDM Smith to conduct soil remediation and replacement at the Beaver Dam School Site after ADLC's contractor completed initial building demolition and concrete/asphalt removal activities but before park construction work commenced. CDM Smith subcontracted soil remediation activities to CDM Constructors, Inc. (CCI) (soil removal and replacement), Barkell Trucking (soil hauling), and R & S Johnson Construction (borrow pit operation). CCI utilized heavy equipment leased from Western States Caterpillar in Missoula, MT to carry out the objective of removal of arsenic impacted soils at the Beaver Dam School site. A Caterpillar D-8 bulldozer was used to push soils into stockpiles. The eastern one-half of the project area was designated for 12-inch removal, while western one-half was designated for 6-inch removal. Impacted soil stockpiles were then loaded to side dump and end dump trucks with trailers for transport to the A-9 waste cell on the Opportunity Ponds repository.

1.5 Construction Completion Report

This CCR contains the following information:

- Description of construction activities, construction schedule, quantities of materials, and problems encountered during construction;
- Health and safety activities;
- Project cost and schedule;

- As-Built drawing (Figure 3); and
- Appendices containing field notes (Appendix A), borrow source analysis (Appendix B), and electronic images (Appendix C).

1.6 Beaver Dam Park RA Description Work Elements

The Beaver Dam Park RA consisted of the following work elements:

- Surveying of the existing project area and establishment of stakes to determine cut volumes.
- Implementation of dust control measures, road and drainage ditch maintenance, and a traffic control plan to control transport of excavated contaminated soils and clean soil fill through the community of Opportunity.
- Mobilization of equipment and trucks, location of buried utilities, and site preparation including clearing and grubbing.
- Excavation of contaminated soils from the site, stockpiling, and transportation to the Opportunity Ponds WMA for disposal.
- Import and placement of clean soil in the excavated area to promote positive site drainage.

As the EPA's RA contractor, CDM Smith served as the construction manager on this project and was responsible for the overall construction quality assurance/quality control. The actual construction work was accomplished by CCI, R & S Johnson, and Barkell Trucking under CDM Smith's direction and supervision.

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Section 2

Section 2

Construction Organization

2.1 Purpose

The purpose of this section is to define the primary roles and responsibilities of key personnel from each party involved with implementing the construction program for Beaver Dam Park RA project.

2.2 Role and Responsibilities

The primary roles and responsibilities of key personnel from each party involved with this construction phase are summarized below.

2.2.1 EPA's Responsibilities

The EPA is the owner of this project and has ultimate responsibility and authority for all aspects of its implementation. EPA personnel and their responsibilities are shown below:

Role	Contact	Responsibilities
Remedial Project Manager	Charlie Coleman	Responsible for day-to-day technical and financial management of this project. Primary EPA contact for all aspects of work. Monitors the project for conformance with scope and budget contained in the EPA Statement of work (SOW) and approved work plan for this work assignment.
Project Officer	Jodi Powell	Responsible for overall technical management of this project under the RAC II Contract with CDM Smith.
Contracting Officer	Corey Kerzhner	Responsible for overall contractual management of this project, including the associated RA subcontract, under the RAC II Contract. Has consent authority for all changes in scope and cost.
RA Oversight Official	Ken Brockman, P.E.	Responsible for conducting construction oversight on EPA's behalf to verify that RA construction is completed in accordance with approved plans and designs.

2.2.2 CDM Smith's Responsibilities

CDM Smith is EPA's contractor under the RAC II Contract for this work assignment. CDM Smith is responsible for construction management on this project, including the provision of all procurement/subcontract management, project management, and construction management required to successfully complete the work specified in the subcontract documents and the EPA-approved work plan.

CDM Smith personnel and their responsibilities are shown below:

Role	Contact	Responsibilities
RAC Program Manager	Kris Chapman	Responsible for overall technical, financial, and contractual management of this project, including the associated RA subcontract.
Project Manager	Gunnar Emilsson, P.E.	Primary CDM Smith contact for all aspects of work. Responsible for the overall execution of work and communicating directly with the EPA RPM on a daily basis.
Procurement/Subcontracts Manager	Vernon Wimberley	Responsible for procurement and overall management of the RA subcontract.
Construction Manager	Joe Faubion	Responsible for all activities related to the execution of construction activities, coordinating CDM Smith's project representatives, directing and overseeing all onsite subcontractors, maintaining schedule control, receiving submittals and reviewing change orders. The construction manager will be responsible for the overall tracking and organization of all field related construction documents, including daily inspection reports and weekly inspection summaries. Also responsible for implementing and overseeing project health and safety requirements.

2.2.3 CDM Smith's Soil Removal Subcontractors

CCI, R & S Johnson, and Barkell Trucking were responsible for completing the construction in accordance with the subcontract documents under CDM Smith's direction and supervision.

2.2.4 State and Local Government Authorities

The Montana Department of Environmental Quality (DEQ) is EPA's partner in implementing this project; however, DEQ was not responsible for implementing the construction work associated with this project. DEQ had limited presence onsite during the Beaver Dam Park RA. DEQ did participate in various aspects of the project, including attendance at weekly meetings and field oversight. DEQ was able to communicate directly with CDM Smith, but did not have the authority to issue directions on EPA's behalf. For this RA project, CDM had the responsibility to obtain any necessary permits and/or permit equivalencies and approvals from DEQ, on behalf of EPA.

ADLC was the municipal authority in charge of monitoring and enforcing local environmental, utility, and zoning regulations. CDM Smith had interaction with ADLC personnel regarding local issues for utility rights-of-way, property owner concerns and communications, local traffic conditions, repair of damage municipal sanitary sewer infrastructure, and truck haulage, among others. ADLC did participate in various aspects of the project, including attendance at weekly meetings.

2.3 Construction Management

This section documents how the Beaver Dam Park RA soil remediation was managed throughout the course of the project.

2.3.1 Responsibilities

The soil removal contractor for EPA was CDM Smith and the excavation and soil replacement contractor for CDM was CCI. Contaminated soil and clean soil backfill hauling was accomplished by

Barkell Trucking. Borrow pit operations were conducted by R & S Johnson Construction. For the purpose of this report, the general work activities that were performed by the applicable contractor or government agency during the Beaver Dam Park RA project are listed below.

- Project startup (CDM Smith and CCI)
- Project progress and management (CDM Smith and CCI)
- Construction oversight and technical direction (CDM Smith)
- Technical support and community relations (EPA and CDM Smith)
- Surveying to determine depth of excavation, excavated surface (CCI)
- Contaminated soil and waste material excavation, hauling, stockpiling, and disposal at Opportunity Ponds WMA (CCI and Barkell)
- Borrow pit development, soil mining, and pit reclamation (R&S Johnson)
- Clean soil transport and placement (Barkell and CCI)
- Project closeout (CDM Smith)
- Construction completion reports (CDM Smith)

2.3.2 Weekly Progress Meetings

Construction progress meetings were conducted each Thursday onsite at 1:00 p.m. These meetings were used to brief CCI and Barkell Trucking personnel of the progress of the remedial action. Issues such as scheduling, health and safety concerns, community relations, budget, and overall progress were discussed at each of the meetings.

2.3.3 Health and Safety

Both CDM and CCI had their own health and safety plans during the Beaver Dam Park RA Project. These plans were prepared by experienced health and safety professionals. Copies of on-site personnel's certificates of completion for hazardous waste operations and emergency response (HAZWOPER) training in compliance with OSHA 1910.120 were provided to the construction manager prior to constructions.

2.3.3.1 Health and Safety Activities

Prior to beginning the haulage of soils and waste materials to the Opportunity Ponds, all personnel involved with transport attended a pre-entry briefing and safety meeting conducted by Atlantic Richfield contractors.

"Tailgate" safety meetings were held on site on a weekly (or more frequent) basis. Issues concerning standard construction safety practices were discussed.

2.3.3.2 Air Monitoring

Based on previous air monitoring conducted during similar soil removal actions at the Anaconda site, air monitoring was not conducted during this project. Atlantic Richfield conducted ambient air

monitoring at the adjacent Opportunity Ponds WMA during site activities. No exceedances of applicable standards were observed. (Atlantic Richfield, 2011b)

2.3.3.3 Reportable Accidents

There were no reportable accidents during the course of the construction.

Section 3

Section 3

Remedial Action Construction Summary

3.1 General Description of Work

This section contains a general discussion of construction activities performed as part of the Beaver Dam Park RA Project. CDM oversight staff utilized field logbooks to record oversight records during the duration of the removal activities and copies of these are provided in Appendix A.

3.1.1 Equipment Storage Areas

CCI and Barkell Trucking used Beaver Dam Road on the north boundary of the Beaver Dam Park Site for overnight equipment storage. The side dump trucks, dozer, grader, excavator, front-end loader and water wagon were parked on the Beaver Dam Road when not in use. Hand tools, traffic barricades and safety cones, lubrication and fueling products were carried in lead equipment operator's vehicle at all times during the course of the construction.

3.1.2 Haul Routes

Haul routes from the Beaver Dam School parcel to the A-9 waste cell on Opportunity Ponds traversed North Hauser Street for two blocks past the Opportunity Country Club to a dirt haul road directly north of the Beaver Dam School Site onto Atlantic Richfield property, then west to the disposal cell. After dumping, the trucks duplicated the route back to the Beaver Dam School Site. The haul route eliminated travel on highways or secondary streets in the Opportunity community. Gates providing access to the haul route were locked at the end of each day during the course of the remedial action.

3.1.3 Traffic Control

No major issues regarding traffic control were encountered during construction at the Beaver Dam Park Site. The area is not subject to heavy traffic, residential travel primary. All CCI and subcontract drivers were briefed before beginning and during the project duration to be aware of all traffic, pedestrians, to obey posted speed limits and signs, and generally be respectful of residential traffic patterns.

3.1.4 Environmental Protection

Environmental protection activities included dust control and storm water run on and runoff control.

3.1.4.1 Dust Control

A 2500 gallon water wagon was leased by CCI from R&S Johnson (local contractor) for the purpose of dust control during the construction at the Beaver Dam Park Site. The water truck was capable of wetting surfaces from multiple angles and directions from the operator's seat. Water was supplied from a fire hydrant 200 feet west of the site.

The water truck was utilized throughout the construction, particularly during soil excavation. Potential fugitive dusts were preventing from entrainment by wind and possible deposition into residential or commercial areas by water saturation of excavation areas and staged soil piles during working hours. All surfaces and piles were sprayed thoroughly at the end of each day.

The leased water truck was also used by CCI for cleaning public streets of soils tracked offsite during backfill stages of construction at the Beaver Dam Park site. To mitigate dust during the haul of backfill material, the water source was also used at the soil borrow area northeast of Anaconda.

3.1.4.2 Storm Water

CCI used silt fences on site as an industrial control of off-site sediment transport during storm events. The silt fences were constructed before excavation activities began and remained in place throughout the course of the project. Although no extraordinarily large storm events occurred while in construction, some overnight rains left standing water on the active excavation surface.

The silt fences were effective in prohibiting runoff from the Beaver Dam Park Site to nearby Mill Creek and drainage ditches, and as best management practices in combination with traffic barricades during non-working hours at the accesses to the site. The silt fences were effective in containing rainfall runoff from the parcel and subsequent mud on public streets. No significant silt build-up or damage to silt fences was noted during use at the Beaver Dam Park Site.

3.1.5 Clearing and Grubbing

Very little clearing of vegetation other than grasses and weeds occurred during the excavation at the Beaver Dam Park Site. An overgrowth of wild rose hedge at the south side of the school was removed and disposed of during construction. All vegetative mass was comingled with the soil waste and transported to the A-9 waste cell. No stumps were encountered during excavation, so grubbing was not required.

3.1.6 Concrete and Asphalt Disposal

Prior to commencing the remedial action, concrete and asphalt present at the site was excavated and removed off-site by CCI. Waste asphalt materials segregated from waste soils at the Beaver Dam Park Site parking lot were hauled to and disposed of at the Gilman Pit area 1 mile east of Anaconda. The Gilman Pit is a privately owned parcel intermittently utilized as a sand and gravel quarry. Waste asphalt products are commonly disposed of in this area contingent on approval from owner and Anaconda city and county officials.

3.1.7 Soil Excavation, Stockpiling and Waste Disposal

End dump and side dump haul trucks were used to transport contaminated soils and wastes from the Beaver Dam Park Site to the Opportunity Ponds A-9 waste cell during excavation of waste soils. The acreage of the Beaver Dam Park Site was stripped of waste and soils with bulldozer and grader. The stripping process proceeded by removing soil to the required depths as staked. The excavated soils were then staged in piles ten feet high. This allowed the excavator to operate on the top of the pile, above the level of the side-dump trucks as load out progressed. This method proved efficient in rapid loading of waste soils at the Beaver Dam Park site.

The side dump trucks departed the worksite on the north side of the site by way of a dirt haul road. All waste and soils were disposed into the A-9 cell on the Opportunity Ponds as directed by Atlantic Richfield. Grading and compaction of lifts within the A-9 waste cell was conducted by the Atlantic Richfield subcontractor during weekends.

No previously undetected (by earlier characterization sampling) mining wastes or deeper contaminated soils were discovered while excavating any portion of the site.

Figure 3 provides a map showing the excavation plan after implementation of the remedy. As such, Figure 3 constitutes the as-built drawing for the site.

3.1.8 Borrow and Fill Source and Placement

A site approximately 8 miles northeast of the Beaver Dam Park site (located at the southwest corner of Section 10, T 5 N, R 10 W) was used to provide soil to replace the quantities removed during RA construction. Ueland Ranches, the owner of the borrow site agreed to plans for quarrying the sandy clay loam glaciolacustrine deposit by pit method. This borrow area was previously used for cover soil ("Type A") in the 2009 A1 Lumber Parcels Site RA. Appendix B contains the results of borrow source physical and chemical laboratory analysis, which indicate that these soils meet the requirements for Type A soil.

CDM Smith subcontracted R & S Johnson Construction to re-open, mine, load trucks, and reclaim the borrow area. A track-mounted excavator was the primary piece of heavy equipment used for staging and stockpiling the borrow source. The sediment at the borrow site was unconsolidated and uncemented by weathering throughout the excavation. Material quarried was not problematic digging, and no erratic size fractions (i.e. boulders) were noted in borrow material at the pit or delivered to the site.

CDM Smith subcontracted multiple side and end dump trucks from Barkell Trucking during the backfill and re-grading phase of the Beaver Dam Park Site RA. The trucks placed loads in windrows, east to west. The rubber tired grader was in continual motion and graded dumped borrow in lifts which was then followed by heavy halftrack of the dozer with attached blade. This method facilitated compaction, suppressed potential fugitive dust generation and provided a field-fit surface of site grading requirements for equipment operators. Borrow materials were watered on a regular basis during borrow placement, use of the water truck during site fill activity also aided in dust suppression and compaction of clean soils.

3.2 Construction-Related Issues

This section discusses construction-related issues that arose during construction, including deviations from the design provided in the construction drawings and ISWP, and problems that arose during construction, and the corrective actions that were subsequently enacted to resolve those problems.

3.2.1 Requests for Change

No change control forms were completed and submitted to EPA during the course of the design.

3.2.2 Problems Encountered During Construction

This section describes problems encountered during construction, and the steps that were taken to correct those problems to complete the Beaver Dam Park RA.

3.2.2.1 Sanitary Sewer

A damaged sewer line reported during construction was later determined to be caused by tree roots penetrating old clay tile pipe, and was not the result of RA operations. ADLC completed the necessary repairs.

3.2.2.2 Trees and Power Lines

During construction planning, it was decided to leave mature poplar trees along the southern boundary of the property in place (see Figure 3). Similarly, soils in a five foot radius of power lines were also left in place for safety reasons. These areas were left undisturbed during construction with existing vegetation remaining in place.

Section 4

Section 4

Project Schedule, Quantities of Materials, and Cost

4.1 Schedule

The following table is a summary of events and dates for the Beaver Dam Park Site RA Project:

Event	Date(s)
Contract Award	April 5, 2011
Pre-construction meeting	April 11, 2011
CCI Mobilization	April 21, 2011
Establishment of survey grid	March 7, 2011
Asphalt removal	May 3-4, 2011
Start of excavation	April 25, 2011
Start of backfill	May 11, 2011
Excavation and soil/waste transport completed	May 20, 2011
Backfill completed	May 25, 2011
Demobilization complete	May 27, 2011

4.2 Quantities of Materials

The following table is a summary of the material used for the Beaver Dam Park Yard Parcels RA Project:

Item	Unit	Quantity
Soil/wastes hauled to Opportunity Ponds WMA	BCY	11,065
Soil backfill hauled and placed at Beaver Dam Site	BCY	11,065
Asphalt disposed offsite at Gilman Pit	LCY	100

BCY = bank cubic yards

LCY = loose cubic yards

4.3 Cost

The construction portion of the Beaver Dam Park Site RA was completed for approximately \$248,000.

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Section 5

Section 5

Operations and Maintenance/Institutional Controls

This section summarizes the post RA construction requirements for operations and maintenance and institutional controls required under Superfund.

Because the Beaver Dam Park Site RA was a complete removal action, no contaminants are presumed to remain in place. Therefore, there are no specific long-term Superfund operations, monitoring and maintenance requirements applicable to the site.

Any additional development of the property must be in accordance with *the ADLC Development Permit System (DPS)* (ADLC, 1992) and other applicable federal, state, and local laws and compliance is the responsibility of the landowner/ developer and/or subsequent landowners, as well as ADLC, in implementing and enforcing the *ADLC DPS* (ADLC, 1992). The developer/landowner, prior to development, must apply for a building permit in accordance with all requirements, and allow for property inspection by the ADLC building inspector. This will ensure that the development occurs in a manner that is protective of human health and the environment. ADLC has implemented the *ADLC DPS* (ADLC, 1992) that sets forth certain requirements for the development of property throughout the county and multiple development districts including the Superfund Planning Area Overlay District (SPAOD). The Beaver Dam Park is within the SPAOD, and the landowner is responsible for complying with the provisions of any local, state, or federal requirements. This includes the requirement to sample, properly handle, and address any soils that exceed certain levels. Waste materials encountered during any construction will be disposed of by the landowner and/or developer in the Opportunity Ponds in accordance with established protocols.

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Section 6

Section 6

References

ADLC. 1992. Anaconda-Deer Lodge County Development Permit System. Anaconda, Montana. Adopted September 2, 1992.

ADLC. 2008a. Interim Institutional Controls Plan, Anaconda Smelter Superfund Site. Prepared for Anaconda – Deer Lodge County by Kuipers & Associates. December.

ADLC. 2008b. Soils Sampling and Analysis Plan, Interim Institutional Controls Plan, Anaconda Smelter Site. Prepared for Anaconda – Deer Lodge County by Kuipers & Associates. December.

Atlantic Richfield. 2011a. Draft Individual Site Work Plan, Beaver Dam Park. March 18, 2011.

Atlantic Richfield. 2011b. Opportunity Ponds Remedial Design Unit 8 Ambient Air Monitoring Program Second Quarter Data Report. August 11, 2011.

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Figures

Figures

Sources: Bing Maps aerial imagery with labels web mapping service courtesy of ESRI.
As Built Drawing provided by Pioneer Technical, 2011.

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**Figure 1. Beaver Dam Park
Site Location Map**

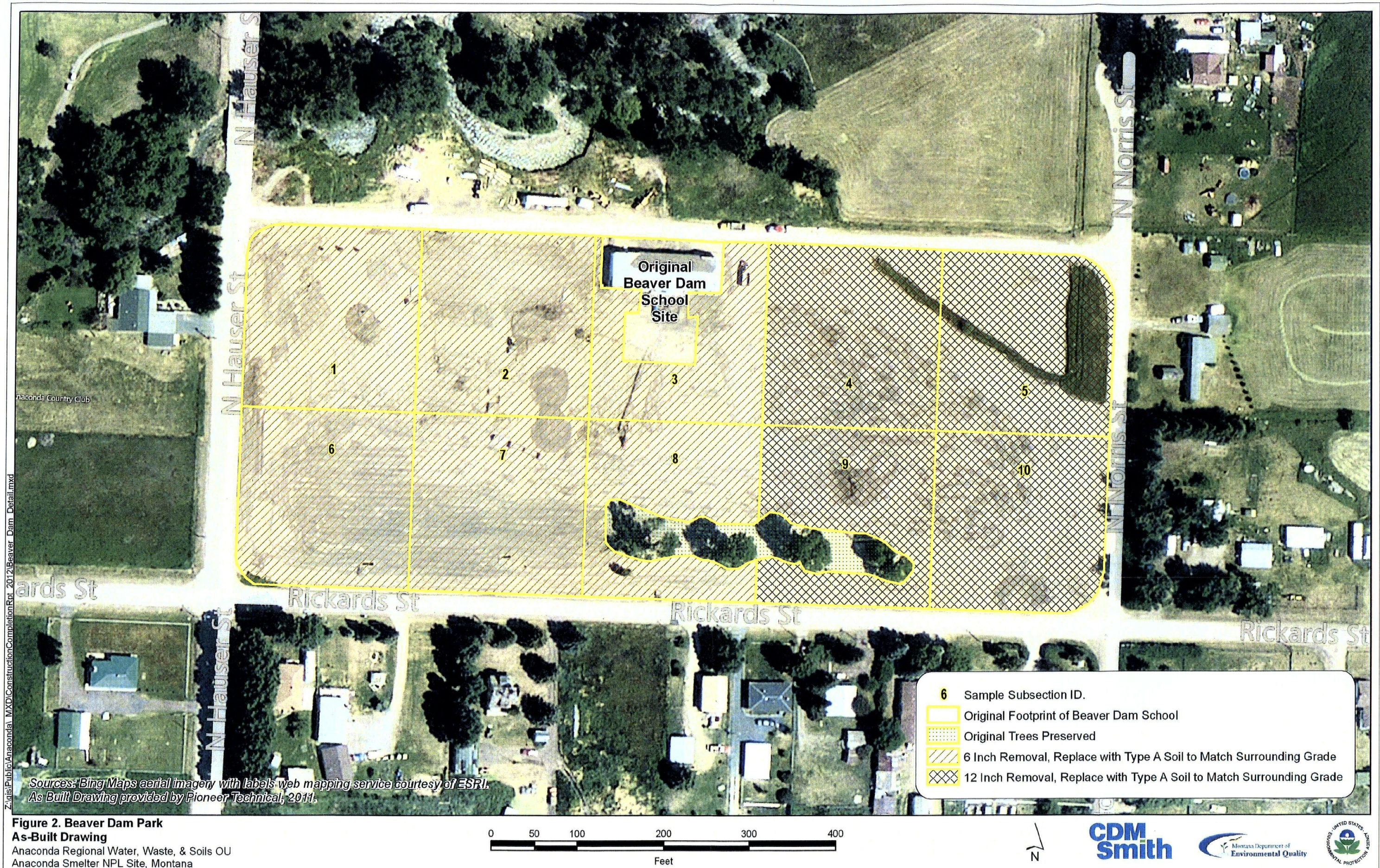
Anaconda Regional Water, Waste, & Soils OU
Anaconda Smelter NPL Site, Montana



**CDM
Smith**

Montana Department of
Environmental Quality





Appendix A

Appendix A

Field Notes

Mon April 25 2011

0730 on site Beaver Dam School

- CCI mobilization over weekend
catapillar excavator, dozer, FE loader

0800 on site safety meeting w/

B. Lyon, G. Lyon, T. Swanson

0900 Begin 12" stripping/stockpiling
at eastern 1/2 of property T. Swanson
install silt fences irrig. ditches

1300 SE quadrant east side 12" stripped,
no visible (oxidized) wastes.

- working around baseball field
backstop - to remain in place

1700 offsite

J-Z

Tues. April 26 2011

4-25-11

0900 on site - continued stripping
stockpiling on east side

T. Swanson finishing silt fence
installation throughout day

B. Lyon dozer G. Lyon excavator

1200 check site - making quick progress

- crew works to 1700, stripping
& stockpiling - no trucks

J-Z

4-26-11

Wed. April 27 2011

1030 ck BD school site continued
stripping/stockpiling with
dozer & excavator

- SW BMP complete - silt fences
parallel all ditches - T. Swanson

1300 approx. 1/2 of eastern 1/2 excavated
/stockpiled to 12" depth - no
undg. utilities

continue strip/stockpile through
day EOD 1730

J-Z

4-27-11

Thurs April 28 2011

0900 on site BD school, snow today
making some mud - not tracking
offsite - activities at east 1/2
stripping/stockpiling

1300 Talk to B. Lyon, G. Lyon on
truck schedule - K. Berkell on
site to discuss contract

- continue strip/stockpile to
EOD 1730

J-Z

4-28-11

Friday April 29 2011

0800 on site, 3 side dump, 3 ~~per~~ end
dump & trailers (Berkull contract)
on site BD school to begin spoil
hauling today - safety briefing
w/ all drivers (H.A., orange, steel tols etc.)

0900 ARCO Pre-entry all drivers
with Mindy Carlsen at ARCO/Jordan
office & sign-in

1000 Begin load-out from stockpiles,
lead trucks to A-9 cell on
haul route north from BD school
site

1600-1700 EOD hauling spoils
throughout day - A-9 cell

1300-1700 2 trucks (Berkull) begin
backfill haul from Euler's borrow

G. Lyon (dozer) spreading fill in PM.

4-29-11

Mon. May 2 2011

0900 on site BD school - 3 trucks
hauling waste, 3 trucks haul
clean fill today - T Swanson
load out spoils, G. Lyon loading
w/ excavator B. Lyon dozer

1230 check site - spoil pile load
out progressing rapidly

1400 Back at site - 3 trucks
hauling to A-9, 3 trucks from
Vulcan ~~gain~~ borrow going OK
- spreading clean fill, east 1/2
about 74 complete.

1700 EOD offsite

Tues. May 3 2011

1000 on site - proceeding
with haulage & fill - 3 trucks
today - 2 trucks hauling
fill

1400 Back on site - good progress
T Swanson loader

B. Lyon dozer G. Lyon Excavator

1700 EOD - offsite

5-3-11

Wed. May 4 2011
 1000 ck at BD school site - eastern
 1/2 approx. 70% complete
 removal / fill
 - G. Lyon begins western 1/2 6"
 removal. 1100 - T Swanson
 loader B Lyon excavator
 1400 Back at site - no problems,
 G. Clark water truck on site
 in afternoon.
 1700 EOD good progress today

~~J-Z~~
 5-4-11

Thurs. May 5 2011
 1000 Trucks stockpiling fill in AM
 N-S windrows at east half of
 site - continue 3 trucks hauling
 spoils to A-9 cell

1300 spoil haulage east 1/2 nearing
 completion - 3 trucks hauling fill
 1330-1700 EOD T Swanson loader
 of spoil piles B Lyon spread fill
 w/ Dozer - G. Lyon removal (6") west
 1/2 w/ excavator

~~J-Z~~
 5-5-11

Fri May 6 2011
 1000 on site - side dumps begin
 fill at northern perimeter
 between main road and irrig.
 ditch - efforts conc. here
 through 1300 - dozer leveling
 1400-1700 EOD
 - continued haulage spoils (3 trucks)
 back fill (3 side dumps)
 through day - dozer compact
 & leveling

~~J-Z~~
 5-6-11

Mon. May 9 2011
 0930 on site BD school
 - continued haulage & fill, 6
 trucks working today
 G. Lyon stripping 6" from west
 side today (excavator)
 1300 As above T. Swanson F.E. loader
 B. Lyon Dozer

~~J-Z~~

- Hunter Bros 5-9-11
 vac truck clean-out vaults today
 5-9

Tues May 10 2011

1000 At BD school - final loads spoils
from east $\frac{1}{2}$ 12" removal removed.
1200 - clean fill leveled to
entrance to N. road leading to
A-9 cell - looks good
Swank crews continue demolition
of Annex portion of school

1300-1700 Equipment to west $\frac{1}{2}$
site - dozer & excavator stripping
T. Swanson load out w/ FE loader
dry conditions - no dust
1730 Lu. site

J-Z

5-10-11

Wed May 11 2011

1000 on site - Swank making fast
work of annex demolition
1300 Call to V. Loran (Kuipers) - Shane
to examine gray layer at annex site
1430 Shane (Kuipers) on site - sample
of ash looking layer under annex slab.
1200-1730 EOD continued haulage
of spoils/fill.

J-Z 5-11-11

Thurs May 12 2011

1100 on site - talk to G. Lyon B Lyon
as to schedule & truck availability
- continued progress on western $\frac{1}{2}$
- using water truck for fugitive
dust control
1400 Back at site, fast progress
on western $\frac{1}{2}$, 80% stripped,
25% hauled.

- Swank continues demolition
and haulage of annex spoils
1430 Begin fill on south side
of school and along Rickards
st - blend east half and
over haulage route bisecting
site

1730 EOD - 6 trucks today

J-Z

5-12-11

Friday May 13 2011

0900 on site BD school, continued
load out of spoils from west
1/2 site to A-9 cellg.

- clean fill by 3 trucks 3
trucks hauling to repository

1100 Back on site, confer w/
B Lyon - schedule & completion
- to keep dozer into next week.

G Lyon going home today.

1300-1700 EOD

- continued haulage, all areas
stripped - no pressing issues
- water truck active through
day.

~~J-73~~

5-13-11

- M. Paffhausen on site
next week - J. Faubion
drill project Long Beach, CA.

Appendix B

Appendix B

Borrow Source Analytical

Friday, August 28, 2009



Andy White
Pioneer Technical Services
307 E. Park Street
Suite 303
Anaconda, MT 59711

RE: UELAND BORROW INVESTIGATION

Work Order: 0908099

Dear Andy White:

MSE Lab Services received 2 sample(s) on 8/19/2009 for the analyses presented in the following report.

Please find enclosed analytical results for the sample(s) received at the MSE Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

A handwritten signature in cursive script that reads "Marcee Cameron".

Marcee Cameron
Laboratory Director/ Chemist
406-494-7371

Enclosure



MSE Analytical Laboratory

P.O. Box 4078
200 Technology Way
Butte, MT 59701

Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-la.com

E-MAILED
8/28 MC

TO: PIONEER TECHNICAL SERVICES
ANDY WHITE

AUG. 19, 2009

FROM: ASHE ANALYTICS

SUBJECT: ANALYTICAL REPORT NO. AW0819J
PROJECT: 13014-003002

TWO (2) SAMPLES WERE RECEIVED ON AUG. 18, 2009 FOR
TOTAL METALS ANALYSIS (As, Cd, Cu, Pb, & Zn) BY XRF.
RESULTS ARE PRESENTED BELOW.

LAB NUMBER	SAMPLE I.D.	As mg/kg	As FLAG	Cd mg/kg	Cd FLAG	Cu mg/kg	Cu FLAG	Pb mg/kg	Pb FLAG	Zn mg/kg	Zn FLAG	SAMPLE PREP GROUP
J-1131	09-ULD-08	26.7		5.0		23.1		7.8		40.9		999795
J-1132	09-ULD-08	2		3.9 U		39.5		12.8		65.2		999795

LABORATORY QA/QC

LAB NUMBER	SAMPLE I.D.	AS PPM	CD PPM	CU PPM	PB PPM	ZN PPM
N-2710	ICV, 08/1	660.815	24.468	2723.628	5331.024	6894.139
CERTIFIED		626	21.8	2950	5532	6952
RECOVERY		105.56	112.24	92.33	96.37	99.17
N-2710		650.342	20.894	2931.951	5443.34	7033.553
CERTIFIED		626	21.8	2950	5532	6952
RECOVERY		103.89	95.84	99.39	98.40	101.17

ABOVE LCS ASSOCIATED WITH SAMPLES J-1131 THROUGH J-1132.

MSE Lab Services

Date: 28-Aug-09

CLIENT:	Pioneer Technical Services	Client Sample ID:	09-ULD-0818-001
Lab Order:	0908099	Collection Date:	8/18/2009 10:00:00 AM
Project:	UELAND BORROW INVESTIGATION		
Lab ID:	0908099-001	Matrix:	SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY - SOILS		MSA10-2.3.1/10-3.3		Analyst: bo/dk			
EC	7700		1.0		µmhos/cm	1	8/24/2009
PERCENT COARSE MATERIAL		ASTMD422		Analyst: bo/dk			
1" Gradation	2.02		0.05		%	1	8/19/2009
2mm Gradation	27.8		0.05		%	1	8/19/2009
PH (SATURATION EXTRACT)		MSA10-2.3.1/10-3.2		Analyst: bo/dk			
pH (saturation extract)	7.74		0.10		SU	1	8/24/2009
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5		MSA15-5		Analyst: bo/dk			
% Clay	20.0		0.1		%	1	8/23/2009
% Sand	72.0		0.1		%	1	8/23/2009
% Silt	8.0		0.1		%	1	8/23/2009
Soil Class	SANDY CLAY LOAM				%	1	8/23/2009
SODIUM ADSORPTION RATIO		OBM-SAR		OBM-SAR		Analyst: SW	
Sodium Adsorption Ratio	7.0	0.01	0.04			1	8/28/2009

 Review

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Instrument Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)



MSE-TA Analytical Laboratory

P.O. Box 4078
200 Technology Way
Butte, MT 59701

Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com



MSE Analytical Laboratory

P.O. Box 4078
200 Technology Way
Butte, MT 59701Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.comDate: 28-Aug-09
Report Date: 28-Aug-09**QA/QC SUMMARY REPORT**Client: Pioneer Technical Services
Project: UELAND BORROW INVESTIGATIONWork Order: 0908099
BatchID: R10507

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
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Sample ID: 0908108-001A DUP				Method: MSA15-5		Batch ID: R10507		Analysis Date: 8/23/2009		
% Clay	20.0	0.1	%					0	35	
% Sand	70.0	0.1	%					5.88	35	
% Silt	10	0.1	%					33.3	35	
Soil Class	NDY CLAY LO		%					0		

Sample ID: BLANK				Method: MSA15-5		Batch ID: R10507		Analysis Date: 8/23/2009		
% Clay	ND	0.1	%							
% Sand	ND	0.1	%							
% Silt	ND	0.1	%							
Soil Class	ND		%							

Review

Qualifiers: 8 Spike Recovery outside accepted recovery limits

R RPD outside accepted recovery limits



MSE Analytical Laboratory

P.O. Box 4078
200 Technology Way
Butte, MT 59701Lab: 406-494-7334
Fax: 406-494-7230
labinfo@msa-ta.comDate: 28-Aug-09
Report Date: 28-Aug-09**QA/QC SUMMARY REPORT**Client: Pioneer Technical Services
Project: UELAND BORROW INVESTIGATIONWork Order: 0908099
BatchID: R10512

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
<i>Sample ID: 0908099-001A DUP</i>										
EC	7530	1.0	µmhos/cm					2.23	20	
<i>Sample ID: BLANK</i>										
EC	ND	1.0	µmhos/cm							
<i>Sample ID: SC STN Q5622</i>										
EC	1408	1.0	µmhos/cm	1413	99.5	80	120			
<i>Sample ID: 0908099-001A DUP</i>										
pH (saturation extract)	7.65	0.10	SU					1.17	35	
<i>Sample ID: BLANK</i>										
pH (saturation extract)	7.88	0.10	SU							
<i>Sample ID: PH LCS Q5228</i>										
pH (saturation extract)	8.09	0.10	SU	8.000	101	80	120			

Review

Qualifiers: 9 Spike Recovery outside accepted recovery limits

R RPD outside accepted recovery limits

MSE Lab Services

Date: 28-Aug-09

CLIENT: Pioneer Technical Services
 Lab Order: 0908099
 Project: UELAND BORROW INVESTIGATION
 Lab ID: 0908099-002

Client Sample ID: 09-ULD-0818-002
 Collection Date: 8/19/2009 10:00:00 AM

Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
ELECTRICAL CONDUCTIVITY - SOILS		MSA10-2.3.1/10-3.3					Analyst: bo/dk
EC	4700		1.0		umhos/cm	1	8/24/2009
PERCENT COARSE MATERIAL		ASTMD422					Analyst: bo/dk
1" Gradation	ND		0.05		%	1	8/19/2009
2mm Gradation	18.1		0.06		%	1	8/19/2009
PH (SATURATION EXTRACT)		MSA10-2.3.1/10-3.2					Analyst: bo/dk
pH (saturation extract)	7.68		0.10		SU	1	8/24/2009
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5		MSA15-5					Analyst: bo/dk
% Clay	22.0		0.1		%	1	8/23/2009
% Sand	66.0		0.1		%	1	8/23/2009
% Silt	12.0		0.1		%	1	8/23/2009
Soil Class	SANDY CLAY LOAM				%	1	8/23/2009
SODIUM ADSORPTION RATIO		OBM-SAR		OBM-SAR			Analyst: js
Sodium Adsorption Ratio	4.6	0.01	0.04			1	8/27/2009

 Review

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Instrument Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)



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Date: 28-Aug-09
Report Date: 28-Aug-09

QA/QC SUMMARY REPORT

Client: Pioneer Technical Services
Project: UELAND BORROW INVESTIGATION

Work Order: 0908099
Batch ID: 2640

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
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Sample ID: 2640-EXT BLANK

Method: OBM-SAR

Batch ID: 2640

Analysis Date: 8/27/2009

Sodium Adsorption Ra

ND

0.04

Sample ID: LCS

Method: OBM-SAR

Batch ID: 2640

Analysis Date: 8/27/2009

Sodium Adsorption Ra

0.23

0.04

0.2429

94.2

80

120

Sample ID: 0908099-001A DUP

Method: OBM-SAR

Batch ID: 2640

Analysis Date: 8/28/2009

Sodium Adsorption Ra

7.0

0.04

0.0562

35

Review

Qualifiers: 8 Spike Recovery outside accepted recovery limits

R RPD outside accepted recovery limits

Table 1. Ueland Borrow Investigation - Sampling Results

Sample ID	Test Pit	Horizon	Horizon Thickness (in)	Electrical Conductivity (µmhos/cm)	Particle Size		pH (SU)	Sodium Adsorption Ratio
					% > 1"	% > 2mm		
09-ULD-0818-001	001	A	> 8ft	7700	2.02	27.8	7.74	7
09-ULD-0818-002	002	A	> 8ft	4780	ND	18.1	7.56	4.6

Table 2. Ueland Borrow Investigation - USDA Soil Textural Class

Sample ID	Test Pit	Horizon	Horizon Thickness (ft)	% Clay	% Sand	% Silt	Soil Class
09-ULD-0818-001	001	A	> 8ft	20.0	72.0	8.0	Sandy Clay Loam
09-ULD-0818-002	002	4	> 8ft	22.0	66.0	12.0	Sandy Clay Loam

MSE Lab

MSE Lab Services

Sample Receipt Checklist

Client Name PTS-ANACONDA

Date and Time Received: 8/19/2009 4:33:07 PM

Work Order Number 0908099

RepID: 1

Received by MC

COC ID:

CoolerID:

Checklist completed by

M. Cameron 8/19/09

Reviewed by

JW 8/19/09

Signature

Date

Initials

Date

Matrix:

Carrier name Hand-Delivered

Shipping container/cooler in good condition?

Yes ☐No ☐Not Present ☒

Custody seals intact on shipping container/cooler?

Yes ☐No ☐Not Present ☒

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

Chain of custody present?

Yes ☒No ☐

Chain of custody signed when relinquished and received?

Yes ☒No ☐

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☐No ☒

Water - VOA vials have zero headspace?

No VOA vials submitted ☒Yes ☐No ☐

Water - pH acceptable upon receipt?

Yes ☐No ☐Blank ☐

Adjusted? _____

Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below

Client contacted _____

Date contacted: _____

Person contacted _____

Contacted by: _____

Regarding: _____

Comments:

TEMP = N/A (SOIL)

Corrective Action _____

NA Solid

Appendix C

Appendix C

Electronic Images



Stripping impacted soils.



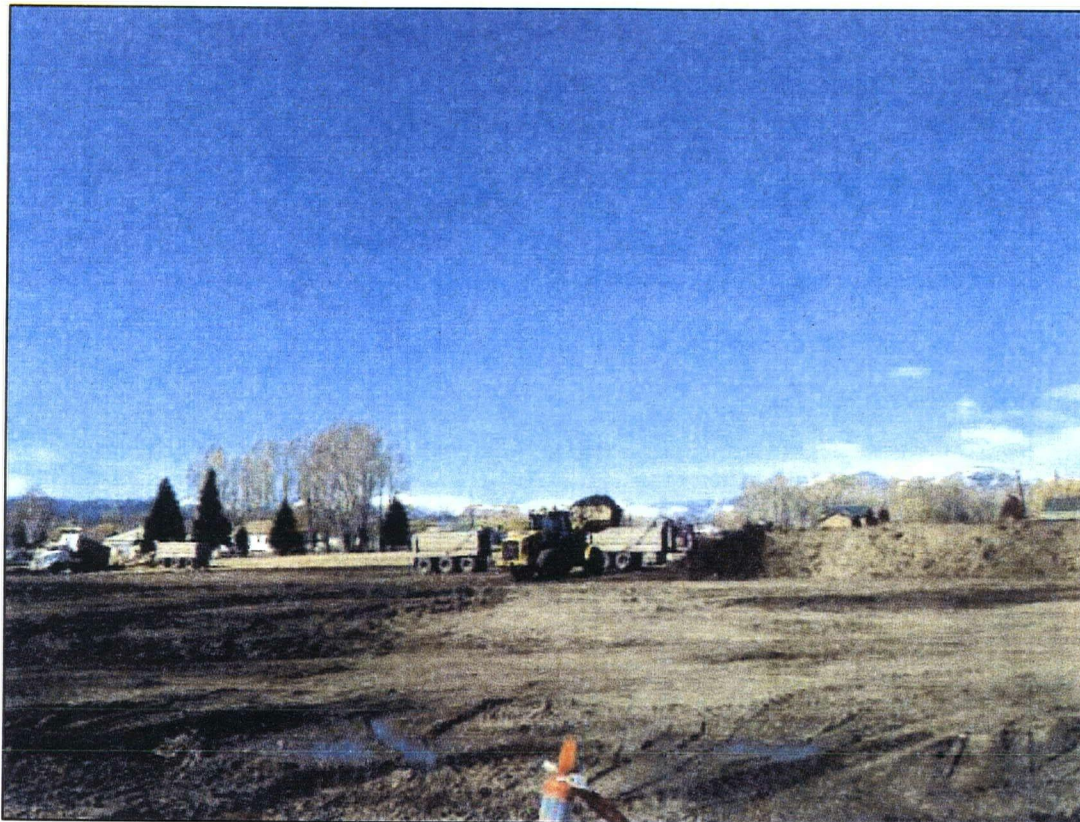
Verifying grade is achieved.



Preserving mature trees during soil removal.



Silt fences were used to prevent sediment runoff into a ditch along the northeast corner of the site.



Loading trucks to haul impacted soil to the A.9 cell.



Clean soil being brought in as backfill.

**CDM
Smith**

cdmsmith.com

